(51) International Patent Classification⁷: C12N

(21) International Application Number: PCT/US02/08278

(22) International Filing Date: 19 March 2002 (19.03.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/277,340   21 March 2001 (21.03.2001)   US
60/306,171   19 July 2001 (19.07.2001)   US
60/331,287   13 November 2001 (13.11.2001)   US

(71) Applicant (for all designated States except US): HUMAN GENOME SCIENCES, INC. [US/US]; 9410 Key West Avenue, Rockville, MD 20850 (US).

(72) Inventors; and
(75) Inventors/Applicants (for US only): ROSEN, Craig, A. [US/US]; 22400 Rolling Hill Lane, Laytonsville, MD 20882 (US). RUBEN, Steven, M. [US/US]; 18528 Heritage Hills Drive, Olney, MD 20832 (US).

(74) Agent: HOOVER, Kenley, K.; Human Genome Sciences, Inc., 9410 Key West Avenue, Rockville, MD 20850 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— without international search report and to be republished upon receipt of that report
— with sequence listing part of description published separately in electronic form and available upon request from the International Bureau

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HUMAN SECRETED PROTEINS

(57) Abstract: The present invention relates to human secreted polypeptides, and isolated nucleic acid molecules encoding said polypeptides, useful for diagnosing and treating immune disorders and diseases. Antibodies that bind these polypeptides are also encompassed by the present invention. Also encompassed by the invention are vectors, host cells, and recombinant and synthetic methods for producing said polynucleotides, polypeptides, and/or antibodies. The invention further encompasses screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The present invention further encompasses methods and compositions for inhibiting or enhancing the production and function of the polypeptides of the present invention.

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
240	HHPGO40	209878 05/18/98	Uni-ZAP XR	250	1002	1	1002	116	116	1147	1	26	27	295
240	HHPGO40	209878 05/18/98	Uni-ZAP XR	713	973	1	973	68	68	1610	1	37	38	302
240	HHPGO40	209878 05/18/98	Uni-ZAP XR	714	984	1	984	74	74	1611	1	37	38	224
241	HHPTJ65	209179 07/24/97	Uni-ZAP XR	251	515	1	515	247	247	1148	1	32	33	48
242	HHSDX28	209346 10/09/97	Uni-ZAP XR	252	1113	1	1113	90	90	1149	1	21	22	56
243	HHSGW69	PTA-855 10/18/99	Uni-ZAP XR	253	1254	1	1254	238	238	1150	1	26	27	55
243	HHSGW69	PTA-855 10/18/99	Uni-ZAP XR	715	826	1	826	231	231	1612	1	26	27	55
243	HHSGW69	PTA-855 10/18/99	Uni-ZAP XR	716	4400	1605	1674		457	1613	1	1	2	314
244	HHTLF25	209125 06/19/97	ZAP Express	254	697	1	661	142	142	1151	1	26	27	111
245	HJABX32	209146 07/17/97	pBluescript SK-	255	1061	454	1061	557	557	1152	1	18	19	51
246	HJACA79	209368 10/16/97	pBluescript SK-	256	887	1	887	84	84	1153	1	28	29	68
247	HJACG02	209215 08/21/97	pBluescript SK-	257	575	1	575	66	66	1154	1	22	23	108
247	HJACG02	209215 08/21/97	pBluescript SK-	717	553	1	553	47	47	1614	1	23	24	108

241	HHPTJ65	490904	251	247 - 393	1148			
242	HHSDX28	553494	252	90 - 260	1149			
243	HHSGW69	1031514	253	238 - 405	1150	Met-1 to Cys-12.	17	
	HHSGW69	853442	715	231 - 398	1612	Met-1 to Cys-12.		
	HHSGW69	905219	716	457 - 1398	1613	Tyr-1 to Ser-6, Ala-18 to Gly-38, Pro-56 to Pro-79, Pro-96 to Ala-113, Gln-116 to Gly-128.		
244	HHTLF25	461438	254	142 - 474	1151	Ala-28 to Ser-33, Ala-76 to Lys-111.	19q13.1	164731, 172400, 172400, 180901, 180901, 221770, 248600, 600918, 602716
245	HJABX32	487807	255	557 - 712	1152	Trp-29 to Gly-42, Gly-46 to His-51.		
246	HJACA79	562729	256	84 - 290	1153			
247	HJACG02	1307789	257	66 - 392	1154	Val-54 to Asp-59.	19p13.3	108725, 120700, 133171, 136836, 145981, 147141, 164953, 188070, 600957, 601238, 601846, 602216, 602477
	HJACG02	509948	717	47 - 373	1614	Val-54 to Asp-59.		
248	HJACG30	895505	258	291 - 425	1155	Thr-26 to Asn-39.	15,X	
	HJACG30	821341	718	50 - 439	1615	Pro-57 to Pro-64.		
	HJACG30	774300	719	350 - 715	1616	Lys-1 to Gly-8.		
249	HJBAV55	823510	259	238 - 414	1156	Lys-47 to Pro-58.	5q34	109690, 109690, 123101, 180071, 600584
250	HJBCU04	877643	260	96 - 626	1157	Met-1 to Cys-7, Gln-45 to Gly-61, Gln-77 to Thr-93, Arg-113 to Arg-118, Ser-135 to Glu-147, Gln-155 to Ala-161.	9p13-p12	230400, 250250
251	HJMBI18	545492	261	574 - 816	1158	Thr-26 to Met-33.	12q24.11	160781, 181405
252	HJMBN89	565675	262	348 - 518	1159		14q32.33	144120, 147020, 147110
253	HJMBT65	596795	263	341 - 469	1160	Thr-36 to Leu-41.	8p11.2-p11.1	136350, 152760, 180100, 182900, 277700, 600617
254	HJMBW30	491209	264	110 - 238	1161	Pro-30 to Ala-35.		

		HHSGW69	853442	715
		HHSGW69	905219	716
244		HHTLF25	461438	254

H0749:5, H0012:5, H0090:5, H0494:5, H0529:5, L0805:5, H0436:5, L0601:5, S0114:4, S0134:4, H0486:4, H0083:4, H0268:4, S0440:4, H0641:4, L0776:4, L0761:4, H0539:4, H0518:4, L0439:4, L0751:4, L0750:4, S0212:3, H0638:3, S0418:3, S0356:3, H0370:3, H0052:3, H0271:3, S0003:3, H0039:3, H0617:3, S0144:3, S0422:3, S0002:3, L0770:3, L0769:3, L0771:3, L0648:3, H0520:3, S0027:3, L0747:3, L0777:3, L0757:3, H0667:3, H0136:3, H0422:3, H0352:3, H0583:2, H0657:2, H0663:2, S0408:2, L0717:2, H0549:2, H0013:2, H0599:2, H0575:2, H0581:2, T0010:2, H0266:2, H0622:2, H0598:2, H0135:2, H0551:2, H0100:2, T0042:2, H0625:2, H0509:2, H0646:2, L0646:2, L0641:2, L0649:2, L0806:2, L0659:2, L0518:2, L0665:2, S0374:2, H0547:2, H0555:2, L0740:2, L0588:2, L0603:2, H0423:2, S0424:2, H0506:2, H0624:1, T0002:1, H0140:1, H0295:1, H0341:1, H0484:1, H0255:1, H0125:1, S0420:1, S0444:1, H0580:1, S0045:1, H0747:1, H0351:1, H0550:1, H0415:1, L0468:1, H0249:1, H0592:1, H0559:1, L0622:1, H0250:1, H0427:1, H0002:1, H0706:1, H0004:1, H0253:1, H0318:1, H0421:1, H0251:1, H0545:1, H0457:1, T0003:1, H0024:1, S0388:1, S0051:1, S0024:1, H0594:1, H0687:1, H0028:1, L0483:1, H0553:1, H0644:1, H0628:1, H0673:1, H0708:1, S0366:1, H0040:1, H0063:1, H0087:1, H0264:1, H0412:1, H0059:1, T0069:1, H0560:1, H0561:1, S0344:1, H0538:1, S0426:1, L3158:1, L0772:1, L0764:1, L0773:1, L0767:1, L0774:1, L0655:1, L0657:1, L0515:1, L0634:1, L0783:1, L0789:1, L0790:1, L0666:1, L0664:1, L2262:1, H0144:1, H0702:1, H0519:1, S0126:1, H0689:1, H0435:1, H0666:1, S0328:1, H0522:1, H0696:1, S3014:1, S0028:1, L0741:1, L0744:1, L0749:1, L0756:1, L0779:1, L0755:1, S0260:1, H0445:1, S0434:1, H0665:1, S0242:1, S0276:1, H0543:1 and S0412:1.

AR251:168, AR248:141, AR249:139, AR265:60, AR253:50, AR263:41, AR244:32, AR096:32, AR268:26, AR264:24, AR290:20, AR246:18, AR240:17, AR177:16, AR267:14, AR183:14, AR270:13, AR229:13, AR184:12, AR269:10, AR274:9, AR194:8, AR175:8, AR316:7, AR247:7, AR202:7, AR313:7, AR234:7, AR055:6, AR299:6, AR033:6, AR180:6, AR198:6, AR271:6, AR182:6, AR238:6, AR206:5, AR190:5, AR205:5, AR188:5, AR275:5, AR272:5, AR061:5, AR196:5, AR284:5, AR241:5, AR273:5, AR173:5, AR189:5, AR203:5, AR199:5, AR237:5, AR179:4, AR039:4, AR200:4, AR172:4, AR191:4, AR298:4, AR192:4, AR181:4, AR291:4, AR104:4, AR289:4, AR176:4, AR224:4, AR292:4, AR186:3, AR282:3, AR226:3, AR174:3, AR300:3, AR165:3, AR161:3, AR162:3, AR266:3, AR285:3, AR163:3, AR164:3, AR231:3, AR185:3, AR052:3, AR215:3, AR295:3, AR212:3, AR243:3, AR309:3, AR221:3, AR166:3, AR169:3, AR296:3, AR232:2, AR053:2, AR223:2, AR225:2, AR089:2, AR277:2, AR233:2, AR213:2, AR308:2, AR286:2, AR256:2, AR257:2, AR283:2, AR310:2, AR235:2, AR217:2, AR227:2, AR204:2, AR288:2, AR195:2, AR281:2, AR293:1, AR312:1, AR214:1, AR261:1, AR294:1, AR236:1, AR216:1, AR193:1, AR259:1, AR230:1 S0144:10, L0775:10, S0278:6, H0638:5, H0580:5, H0641:5, L0438:5, H0521:5, H0740:4, H0392:4, L0747:4, S0408:3, H0522:4, L0747:4, S0408:3, H0749:3, H0441:3, H0438:3, S0388:3, S0428:3,

			H0658:3, H0402:2, S0358:2, S0444:2, S0140:2, H0747:2, H0086:2, S0142:2, L0520:2, L0763:2, L0770:2, L0772:2, L0771:2, L0774:2, L0776:2, L0526:2, L0743:2, L0439:2, L0751:2, L0754:2, L0756:2, L0605:2, S0116:1, H0662:1, S0360:1, L3646:1, H0637:1, S0045:1, S0222:1, S6014:1, H0455:1, H0592:1, H0250:1, H0069:1, H0575:1, T0082:1, H0036:1, H0581:1, H0457:1, S0051:1, S0050:1, H0399:1, H0354:1, H0594:1, H0247:1, H0271:1, L0055:1, S0036:1, S0038:1, H0646:1, L0769:1, L0764:1, L0375:1, L0787:1, S0053:1, S0374:1, H0682:1, H0648:1, H0710:1, S0152:1, H0727:1, L0744:1, L0755:1, L0731:1, L0758:1, L0599:1, L0603:1, H0423:1 and H0352:1.
245	HJABX32	487807	255	AR060:16, AR055:15, AR271:11, AR282:10, AR104:10, AR089:9, AR283:9, AR299:8, AR253:7, AR185:7, AR039:6, AR096:6, AR316:6, AR300:6, AR193:6, AR176:6, AR235:5, AR198:5, AR213:5, AR221:5, AR197:5, AR243:5, AR178:4, AR218:4, AR269:4, AR291:4, AR224:4, AR196:4, AR275:4, AR277:4, AR245:4, AR266:4, AR172:4, AR053:4, AR313:4, AR165:3, AR222:3, AR164:3, AR177:3, AR166:3, AR250:3, AR264:4, AR270:4, AR169:3, AR162:3, AR207:3, AR183:3, AR246:3, AR229:3, AR182:3, AR033:3, AR268:3, AR204:3, AR161:3, AR240:3, AR201:3, AR175:3, AR272:3, AR254:3, AR247:3, AR238:3, AR289:3, AR261:3, AR267:3, AR195:3, AR242:3, AR295:3, AR180:3, AR163:2, AR296:2, AR230:2, AR288:2, AR274:2, AR233:3, AR179:3, AR231:2, AR219:2, AR294:2, AR239:2, AR255:2, AR297:2, AR293:2, AR212:2, AR236:2, AR226:2, AR232:2, AR234:2, AR237:2, AR290:2, AR312:2, AR173:2, AR227:2, AR287:2, AR181:2, AR205:2, AR191:2, AR214:2, AR217:2, AR061:2, AR171:2, AR257:2, AR200:2, AR189:2, AR311:2, AR216:2, AR188:2, AR256:1, AR199:1, AR286:1, AR190:1, AR174:1, AR252:1, AR170:1, AR211:1, AR260:1, L0157:3, L0748:2, L0731:2, H0656:1, L0005:1, S0408:1, H0729:1, S0278:1, H0261:1, L3653:1, H0101:1, H0052:1, L0471:1, H0024:1, H0424:1, H0213:1, T0041:1, H0647:1, L0769:1, L0363:1, L0774:1, L0806:1, L0805:1, L0776:1, L0807:1, L0657:1, H0519:1, S0406:1, H0627:1 and L0744:1.
246	HJACA79	562729	256	AR313:30, AR165:21, AR166:19, AR161:19, AR162:19, AR164:19, AR163:19, AR089:17, AR173:16, AR242:15, AR300:14, AR096:13, AR247:12, AR192:12, AR229:12, AR299:11, AR204:10, AR178:10, AR197:10, AR180:10, AR312:10, AR240:10, AR177:9, AR175:9, AR174:9, AR264:9, AR183:9, AR053:9, AR176:8, AR226:8, AR270:8, AR234:8, AR179:8, AR238:8, AR181:8, AR185:8, AR309:8, AR233:8, AR257:8, AR196:8, AR268:7, AR212:7, AR193:7, AR182:7, AR316:7, AR274:7, AR195:7, AR269:7, AR198:7, AR060:7, AR213:7, AR039:7, AR275:6, AR245:6, AR231:6, AR207:6, AR191:6, AR250:6, AR169:6, AR201:6, AR237:6, AR243:6, AR104:5, AR272:5, AR271:5, AR239:5, AR277:5, AR258:5, AR199:5, AR230:5, AR308:5, AR267:5, AR228:5, AR263:5, AR203:5, AR266:5, AR200:4, AR033:4, AR282:4, AR262:4, AR189:4, AR227:4, AR246:4, AR188:4, AR261:4, AR205:4, AR218:3, AR254:3, AR283:3, AR055:3, AR235:3, AR311:3, AR232:3, AR061:3, AR172:3, AR171:2, AR190:2, AR255:2, AR214:2, AR219:2, AR297:2, AR221:2, AR256:2, AR293:2, AR260:2, AR225:2, AR289:2, AR285:2, AR294:2, AR286:1, AR291:1, AR217:1, AR253:1, AR252:1 H0580:1,

243	HHSGW69	1150	Production of IL-10 and downregulati on of immune responses	Eur J Immunol 29(12):3914-3924 (1999); Zheng and Flavell, Cell 89(4):587-596 (1997); and Henderson et al., Mol Cell Biol 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.
				IL-10 FMAT. Assays for immunomodulatory proteins produced by activated T cells, B cells, and monocytes that exhibit anti-inflammatory activity and downregulate monocyte/macrophage function and expression of cytokines are well known in the art and may be used or routinely modified to assess the ability of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, regulate inflammatory activities, and modulate immune cell function and cytokine production. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-10, and the downmodulation of immune responses. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Koning et al., Cytokine 9(6):427-436 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.
244	HHTLF25	1151	Production of IL-10 and downregulati on of immune responses	IL-10 FMAT. Assays for immunomodulatory proteins produced by activated T cells, B cells, and monocytes that exhibit anti-inflammatory activity and downregulate monocyte/macrophage function and expression of cytokines are well known in the art and may be used or routinely modified to assess the ability of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, regulate inflammatory activities, and modulate immune cell function and cytokine production. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-10, and the downmodulation of immune responses. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Koning et al., Cytokine 9(6):427-436 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used

245	HJABX32	1152	Production of IL-10 and activation of T-cells.	according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.
				Assays for production of IL-10 and activation of T-cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit production of IL-10 and/or activation of T-cells. Exemplary assays that may be used or routinely modified to assess the ability of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) to modulate IL-10 production and/or T-cell proliferation include, for example, assays such as disclosed and/or cited in: Robinson, DS, et al., "Th-2 cytokines in allergic disease" Br Med Bull; 56 (4): 956-968 (2000), and Cohn, et al., "T-helper type 2 cell-directed therapy for asthma" Pharmacology & Therapeutics; 88: 187-196 (2000); the contents of each of which are herein incorporated by reference in their entirety. Exemplary cells that may be used according to these assays include Th2 cells. IL10 secreted from Th2 cells may be measured as a marker of Th2 cell activation. Th2 cells are a class of T cells that secrete IL4, IL10, IL13, IL5 and IL6. Factors that induce differentiation and activation of Th2 cells play a major role in the initiation and pathogenesis of allergy and asthma. Primary T helper 2 cells are generated via in vitro culture under Th2 polarizing conditions using peripheral blood lymphocytes isolated from cord blood.
246	HJACA79	1153	Production of MCP-1	MCP-1 FMAT. Assays for immunomodulatory proteins that are produced by a large variety of cells and act to induce chemotaxis and activation of monocytes and T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, induce chemotaxis, and modulate immune cell activation. Exemplary assays that test for immunomodulatory proteins evaluate the production of cell surface markers, such as monocyte chemoattractant protein (MCP), and the activation of monocytes and T cells. Such assays that may be used or routinely modified to test immunomodulatory and diffferentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Satthaporn and Eremin, J R Coll Surg Ednb 45(1):9-19 (2001); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell

				sapiens]	8.1|AAH008 28			
HHEPU04	535730	708	WUblastx.64	(Q9BQB6) UNKNOWN (PROTEIN FOR MGC:11276) (PROTEIN FOR IMAGE:3455200).	Q9BQB6	72% 83% 100%	326 217 45	424 339 218
HHFEC49	905849	241	WUblastx.64	(Q9D1N2) 1110002J19RIK PROTEIN.	Q9D1N2	56%	180	500
HHFGR93	865581	242	WUblastx.64	(Q96AP7) Hypothetical 41.2 kDa protein.	Q96AP7	100%	132	1301
HHFGR93	691402	709	HMMER 2.1.1	PFAM: Immunoglobulin domain	PF00047	36.3	628	807
			WUblastx.64	(Q96AP7) Hypothetical 41.2 kDa protein.	Q96AP7	98% 99%	819 130	1298 828
HHFHR32	411470	244	WUblastx.64	(Q99LX9) SIMILAR TO SINGLE-STRANDED-DNA-BINDING PROTEIN.	Q99LX9	100%	1	762
HHFOJ29	1127491	245	WUblastx.64	(Q9H7P4) FLJ00024 PROTEIN (FRAGMENT).	Q9H7P4	99%	592	65
HHGCM76	662329	246	WUblastx.64	(Q96FV2) Unknown (protein for IMAGE:3945715) (Fragment).	Q96FV2	94% 98%	7 378	114 536
HHGCM76	383547	712	WUblastx.64	(Q96FV2) Unknown (protein for IMAGE:3945715) (Fragment).	Q96FV2	94% 98%	7 378	114 536
HHGDW43	554613	248	WUblastx.64	(Q9PIJ1) PRO1546.	Q9PIJ1	59% 52%	707 774	787 887
HHPGO40	1299927	250	WUblastx.64	(Q9HBW1) Brain tumor associated protein NAG14.	Q9HBW1	74% 30%	191 338	976 928
HHPGO40	753270	713	HMMER 2.1.1	PFAM: Leucine Rich Repeat	PF00560	122	542	613
			WUblastx.64	(Q9HBW1) Brain tumor associated protein NAG14.	Q9HBW1	74% 30%	191 338	967 928
HHPGO40	560969	714	HMMER 2.1.1	PFAM: Leucine Rich Repeat	PF00560	77	548	619
HHSGW69	1031514	253	WUblastx.64	(O95325) PROTEASOME SUBUNIT P58.	O95325	100% 94%	730 529	780 582
HHTLF25	461438	254	WUblastx.64	(Q9UMT3) KILLER ACTIVATING RECEPTOR ASSOCIATED PROTEIN, ISOFORM B.	Q9UMT3	91%	142	474
HJABX32	487807	255	WUblastx.64	(O70277) RING FINGER PROTEIN.	O70277	98%	463	612

AF111847.1, AL442072.1, AL117435.1, AL122121.1, AK000445.1, AK000083.1, AK026592.1, AK026855.1, AB062938.1, AK026452.1, AL359615.1, AL080137.1, AK000652.1, AL122093.1, AK026533.1, AL137557.1, AF207829.1, AK026784.1, AK025092.1, AL136799.1, AL050138.1, AL389982.1, AK026959.1, AB063008.1, AL049314.1, AL133557.1, AL359601.1, AK026927.1, BC006195.1, AK027113.1, AB060912.1, AK027868.1, AB056768.1, AL133093.1, BC006807.1, AL512746.1, AK026534.1, AL096744.1, AB051158.1, AK026532.1, AK025209.1, AL133560.1, AF125948.1, AL133565.1, BC008070.1, AB060826.1, AK026542.1, AK026353.1, AL117583.1, AB060863.1, AL080124.1, AL136768.1, AL117394.1, AK000432.1, AK026608.1, X82434.1, AK027164.1, AK026583.1, AB048954.1, AK025491.1, AB055368.1, AL137283.1, AB047904.1, BC001045.1, AB052191.1, AL136928.1, AF219137.1, AF260566.1, AL353940.1, BC008899.1, AK000618.1, AB060825.1, AL049466.1, AK025772.1, AB055315.1, AL049464.1, AL122123.1, BC002733.1, AL136786.1, AB056421.1, AF091084.1, AB060852.1, BC004556.1, AK027116.1, AK026947.1, BC008485.1, BC007199.1, AL512684.1, AK000212.1, AL049283.1, AL512689.1, AK000614.1, AF097996.1, Z82022.1, AL137271.1, AK025967.1, BC002839.1, AF177336.1, U91329.1, AK026086.1, AK025391.1, AB050510.1, AK000323.1, AL049300.1, AL049382.1, AF183393.1, AK026528.1, AB056809.1, AK027204.1, AL049430.1, AK000647.1, AL137538.1, AL122110.1, AK025484.1, BC008983.1, BC008280.1, AK024524.1, AL512761.1, X72889.1, AK025524.1, AL136843.1, AL133113.1, X65873.1, AB052200.1, AL137648.1, U80742.1, AK026651.1, AK000718.1, AB055374.1, AL162062.1, BC008382.1, AK025906.1, AL359583.1, AK025632.1, AL137463.1, BC006412.1, AL110197.1, AL359622.1, BC006164.1, AB060883.1, AF271350.1, BC008893.1, AK026526.1, BC001349.1, AC019095, AC019095.				
AA481924, BF343628, AI276798, BE858514, BF915546, BG058647, BF917552, AI299346, N41026, BF914451, AA989053, W60864, BF915075, AI423526, BF106006, AI289858, AA746220, BF915128, AI306602, AW015647, AA633118, AI207255, BF913974, AI301688, W92376, AI139176, AA971275, AA480109, H12338, BF912934, AA865668, BF901361, F30553, AW975896, AA991168, AJ302882, BF915115, AA729941, AA627378, AA865651, AW607348, H39980, AA729534, T55959, T57206, AW607175, W60940, BE155729, AI880682, AW383808, BG058709, AW383055, AW383057, BE154544, AW383016, AW383047, AW383871, AW383051, BF901355, AW383000, AI919456, BE154555, BF914191, F32872, AI017727, AA974881, BE154538, AW383009, BF092099, AI243983, AA991170, R49835, AA318120, BF893642, W74783, AW382999, AV712713, AW579628, H12392, AW372144, AW372157, AW383836, T52100, AW372154, AW383822, AW383837, AW579627, AW383817, AW372166, BF881098, AW382997, D20493, AW372161, AW383865, AA918360, N47127, AW579992, AA937670, AW579601, AW579998, AU076484, AI245273, BF831159, AA664094, AA878598.	15 - 697	1 - 683	461438	254	HHTLF25

HJABX32	255	487807	1 - 1047	15 - 1061	AA865673, AI807718, AA937805, BF350664, AI525220, AD000833.1, AF019563.1, AF019562.1, AJ010098.1, AD000864.1, X78928.1, AF072845. 1. BE385796, AL048522, AA114843, AV723581, AA114842, AA565480, AA310353, D80486, D60174, BF953264, D60503, D59975, BF950356, BF950358, D60175, AW612691, AI972034, BE677654, D81110, AI017365, N71311, AA248844, AW953422, D80968, D60623, H22225, AI439412, N71362, C15057, AA907114, BF953271, AI783844, AI086417, BE254805, AI088382, AI813642, AI971901, AL122053.1, AF220022.1, AF045239. 1.
HJACA79	256	562729	1 - 873	15 - 887	BE348441, BE644740, AI912665, AA310811, AW504485, AV763026, AV502796, AW500029, BE207631, AI732151, AL079734, AV711465, AW327624, AI357823, AA469327, N42040, AW970877, BF681619, AU152561, AW148507, AI040051, AW302909, AI188390, AI654285, AV759632, AW855803, AW855730, AI753113, AW190505, AV760918, AI755202, AI066646, AV758097, AA573033, BF751949, AL042756, AA602557, AA491960, BE062476, BE062478, AW769151, AA613624, AI037897, AA171941, AW571499, AI753037, AI366902, AA809546, AL048135, AA877992, AW468003, AL047879, AL119438, AL120959, AW274072, AC068799.14, AC009087.4, AC003041.1, AC006441.13, AC005874.3, AF134471.1, AC005701.1, AL049820.23, AP001717.1, AL049715.25, AC022392.4, AL034549.19, AC006165.1, AC005971.5, Z85986.1, AL138960.16, AC008569.6, AC007052.4, AL035690.10, AC012627.4, AL162615.13, AC002531.1, AC008897.7, AC011500.7, AC019205.4, AJ229041.1, AC005520.2, AL162615.13, AC012476.8, AC006285.11, AP000512.1, AC005377.2, AB023051.1, AF053356.1, AL118502.38, AL354808.24, AC005255.1, AC007899.3, AC004859.2, AL136308.4, AL118502.38, AC008733.7, AC011464.5, AC025166.7, AL109827.8, AL133211.9, AC018809.4, AL034418.5, AL391684.6, AL138885.21, AL353812.13, AC004929.2, AL356257.14, AC007374.6, AC007956.5, AL109627.18, AC019206.4, AL139321.28, AL096791.12, AL391114.12, AC090958.1, AC005829.1, AL451125.7, AC005077.5, AC018758.2, AF168787.1, AC000360.35, AC006111.3, AL136295.3, AL161672.13, AL121890.34, AC009144.5, AC076679.4, AC006116.1, AL121989.12, AP000246.1, AC073316.6, AC080012.20, AL133355.12, AC083871.2, AC053467.1, AC007318.4, AC079383.17, AL163279.2, AC006511.5, AL080243.21, AC006077.1, AL391259.15, AC004983.2, AL139100.9, AC006001.2, AL049646.19, AP003357.2, AC011443.6, AC003962.1, AC011479.6, AC011448.3, AC008753.8, AC008440.8, AC008687.4, AC009331.5, AC015987.5, AC010149.8, AC079754.4, AL356299.16, AL117692.5, AC008750.7, AC018635.6, AP001710.1, AC009073.8, AL136173.24, AP001432.1, AC003982.1, AC004894.1, AC005682.2, AF064861.1, AC008962.8, AC008507.8, AC004417.1, AL109947.19, AC009570.13, AF111167.2, AC008745.6, AL359091.10, AL445483.13, AC005399.19, AP002392.3, AC010422.7, AL157791.4, AC005000.2, AF134726.1, AL022329.9, AC006312.8, AC012368.6, AL034380.26, AC003957.1, AC010203.13, AC015968.4, AL022156.2, AC017070.9,